

Title (en)

Thruster systems for spacecraft station changing, station keeping and momentum dumping

Title (de)

Schuberzeugende Systeme zur Positionserhaltung und -änderung sowie Momentenentladung eines Raumfahrzeuges

Title (fr)

Systèmes propulsifs pour le maintien et le changement de position et la décharge du moment cinétique d'un engin spatial

Publication

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Application

EP 01129689 A 20011213

Priority

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Abstract (en)

Spacecraft thruster systems (60) are provided that can realize station changing, station keeping and momentum dumping in spacecraft (40) while minimizing loss of spacecraft service time. The systems (60) are formed with pairs of E and W thrusters (62, 63), NE and SE thrusters (64, 66) and NW and SW thrusters (65, 67) whose thrust directions are each defined by respective polar angles (θ) and slew angles (α). The E and W thrusters (62, 63) are especially suited for rapid station changing while the remaining thrusters (64-67) generate normal, tangential and radial components required for station keeping. Because all thrusters (62-67) are directed through the space-craft's center (98) of mass during station changing and station keeping firings, the spacecraft's attitude is not disturbed and loss of service time is avoided. The thrusters (62-67) are preferably gimbaled so that they can track spatial changes of the spacecraft's center (98) of mass or, for momentum dumping, be offset (99) from the center (98) of mass. The normal, tangential and radial thrust components of these thruster systems (60) are arranged so that station changing, station keeping and momentum dumping are still realized after the failure of any thruster pair (Fig. 2). <IMAGE>

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IPC 8 full level

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